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IN THE MATTER

OF THE

Petition of George H. Corliss,

FOR AN EXTENSION OF HIS

LETTERS PATENT,

FOR IMPROVEMENTS IN

STEAM ENGINES.

PROVIDENCE:
PROVIDENCE PRESS COMPANY, PRINTERS.
1870.

Corliss, George Henry, 1817-1888

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Thomas A. Jones



Apr. 8, 1949

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Petition for Extension of Patents.

To the Hon. the Senate and House of Representatives in Congress Assembled :

The petition of Geo. H. Corliss, of the city of Providence, State of Rhode Island, respectfully represents :

That your petitioner is the inventor of certain improvements in Steam Engines, for which he received Letters Patent of the United States, dated March 10th, 1849 :

That subsequently these Letters Patent were surrendered, and on the 12th of July, 1859, were reissued to your petitioner in six separate parts, for six distinct improvements embodied in the original patent :

That upon the expiration of the term of 14 years, — on the 10th March, 1863, upon due proceedings according to law, an extension of these Patents was granted by the Commissioner of Patents for the term of 7 years, which term will expire on the 10th March next :

That after the granting of said extension, the time and pecuniary resources of your petitioner were largely and for a long time diverted from the development of his own inventions to the execution of certain contracts for machinery for the United States Navy, in which those inventions were excluded :

That said improvements are of great and permanent value to the industrial interests of the country :

That your petitioner has not been adequately remunerated for his inventions, and that the failure to secure

such remuneration has not arisen from a want of reasonable diligence and persistency in bringing them into use :

That said improvements, being connected with the development of power in the steam engine, are of such a nature that it has required much time, and a large outlay of money to establish their merits :

That as soon as the merits of said improvements were beginning to be acknowledged, so that they possessed some mercantile value, your petitioner found himself involved in a course of litigation, which has made the history of his patents for nearly twenty years a record of lawsuits, and although the courts of the United States have vindicated his course in respect to all of this litigation, and have established the validity of his Letters Patent, yet the process of vindication has been so expensive as to absorb a large proportion of the profits of the invention, and so prolonged, that the Extension now sought for is necessary to render his success in said litigation of any practical value :

That all the rights of property in these inventions covered by said Letters Patent, heretofore enjoyed by your petitioner have not been equivalent to an exclusive use of the same for a term of seven years :

Your petitioner therefore asks for an Extension of his said patents for another term of seven years, in order that he may secure to himself an equivalent of the original term of 14 years, for which his Letters Patent were originally granted.

All of which is respectfully submitted for the consideration of your Honorable body.

(Signed)

GEO. H. CORLISS.

Washington, D. C., Dec. 9, 1869.

The following parties, users of my improvements, and representing the most important industrial interests of this country, join in asking the favorable consideration of my petition, upon the following invitation :

PROVIDENCE, R. I.,

1870.

To

If the object of the enclosed Petition meets with your approval, please sign and return same to me, and oblige,

Yours, very respectfully,

GEORGE H. CORLISS.

To the Honorable Senate and House of Representatives, of the United States, in Congress assembled :

The undersigned, having been informed of the pendency of the petition of GEORGE H. CORLISS, of Providence, R. I., for an EXTENSION OF HIS LETTERS PATENT, for "Improvements in Steam Engines," and knowing by THE USE OF SAID IMPROVEMENTS that they are of great practical value to the industrial interests of the country, and believing that he has not been adequately remunerated therefor, do join in an earnest request that his application may receive the favorable consideration of your Honorable body.

NAMES.	PLACE OF BUSINESS.	Horse power used.
Androscoggin Mills.....	Lewiston, Me.....	200
Lewiston Machine Co.....	" "	50
Manchester Print Works.....	Manchester, N. H.....	450
Aretas Blood.....	" "	30
Eaton & Ayer.....	Nashua, "	125
Nashua Manufacturing Co.....	" "	350
D. H. Buffum.....	Great Falls "	25
C. M. Willard.....	Castleton, Vt.....	50
S. A. Denio.....	Boston, Mass	60
E. H. Ashcroft	" "	40
Lowell Felting Mills.....	" "	40
Boston Elastic Fabric Co.....	" "	250
Charles E. Hall & Co.....	" "	80

NAMES.	PLACE OF BUSINESS.	Horse power used.
F. Skinner & Co.....	Boston, Mass	300
Kearsarge Mills.....	" "	350
Assabet Manufacturing Co.....	" "	150
Tudor Co.....	" "	300
Dearborn, Robinson & Co.....	" "	250
John A. Robertson.....	" "	150
Smith & Porter.....	" "	80
Smith & Wheeler.....	" "	100
Smith & Lovett.....	" "	25
Rand, Avery & Frye	" "	40
Chickering & Sons.....	" "	120
Tileston & Hollingsworth.....	" "	125
Gardner Chilson.....	" "	30
E. R. Mudge, Sawyer & Co	" "	500
Doe & Charmois.....	East Cambridge, Mass....	60
John Roberts & Son.....	Waltham, "	50
Boston Manufacturing Co.....	" "	} 900
Waltham Bleachery	" "	
American Watch Co.....	" "	40
David Buffum.....	Salem, "	80
Salem Lead Co.....	" "	80
E. E. Foster	Lawrence, "	20
Pacific Mills.....	" "	500
Washington Mills.....	" "	500
Atlantic Cotton Mills	" "	500
Bartlett Steam Mills.....	Newburyport, "	230
Carr, Brown & Co.....	" "	60
Ocean Steam Mills.....	" "	120
Neponset Cotton Factory.....	Canton, "	12
Revere Copper Co.....	" "	110
Foundry and Machine Co.....	Taunton, "	50
P. F. Smith & Co.....	" "	60
Eagle Cotton Co.....	" "	125
L. M. Leonard	" "	20
Reed & Barton.....	" "	80
Phoenix Manufacturing Co.....	" "	60
New Bedford Cordage Co	New Bedford, "	250
Wamsutta Mills.....	" "	925
New Bedford Flour Mill.....	" "	350
Fall River Manufactory.....	Fall River, "	200
Union Mill Co.....	" "	900
Massasoit Flour Mills.....	" "	250
Marvel, Davol & Co.....	" "	25
Uxbridge Woolen Mill.....	Uxbridge, "	60

NAMES.	PLACE OF BUSINESS.	Horse power used.
C. A. & S. M. Wheelock.....	Uxbridge, Mass.....	25
C. W. Hamilton & Co.....	Worcester, ".....	15
Washburn & Moen Mf'g Co.....	" ".....	550
Ethan Allen & Co.....	" ".....	50
Henry A. Breed.....	Lynn, ".....	100
S. Oliver Breed.....	" ".....	85
Bigelow Carpet Co.....	Clinton, ".....	180
E. S. Fuller.....	" ".....	30
S. & W. Foster.....	Attleboro', ".....	60
Plymouth Woolen Mills.....	Plymouth, ".....	50
Little & Stanton.....	Huntington, ".....	100
Edwin F. Longley.....	Marlboro', ".....	10
Tremont Nail Co.....	W. Wareham, ".....	250
Horace Conn & Co.....	Woburn, ".....	40
J. & J. Murdock.....	Leicester, ".....	15
Dwight Manufacturing Co.....	Chicopee, ".....	400
Hingham Cordage Co.....	Hingham, ".....	150
Heywood, Bros. & Co.....	Gardner, ".....	125
Hollingsworth & Whitney.....	Watertown, ".....	215
Boston Rubber Shoe Co.....	Malden, ".....	300
E. J. W. Morse & Co.....	South Easton, ".....	60
Smith & Wesson.....	Springfield, ".....	40
Dighton Furnace Co.....	No. Dighton, ".....	60
C. M. Clapp.....	W. Roxbury, ".....	60
Old Colony Iron Co.....	Squawbetty, ".....	450
Aurin Wood.....	Worcester, ".....	50
Providence Iron Co.....	Providence, R. I.....	650
William A. Harris.....	" ".....	30
Providence Rubber Co.....	" ".....	30
H. L. Kendall.....	" ".....	20
William B. Rider.....	" ".....	60
Weybosset Mills.....	" ".....	280
Richmond Manufacturing Co.....	" ".....	300
Groton Manufacturing Co.....	" ".....	140
B. B. & R. Knight.....	" ".....	875
A. & W. Sprague Mf'g Co.....	" ".....	1050
Providence Steam & Gas Pipe Co	" ".....	30
Amos D. Smith.....	" ".....	600
John Kendrick.....	" ".....	70
Albert Dailey.....	" ".....	60
Smithville Manufacturing Co.....	" ".....	160
J. Y. Smith Manufacturing Co..	" ".....	60
Providence Dyeing, Bleaching & Calendering Co.....	" ".....	200

NAMES.	PLACE OF BUSINESS.	Horse power used.
Harris Manufacturing Co.....	Providence, R. I.	70
R. I. Bleachery & Dye Works ..	" "	165
Gorham Manufacturing Co.....	" "	65
Phoenix Iron Foundry.....	" "	80
Earl P. Mason.....	" "	50
Providence & Worcester R. R. Co	" "	30
R. I. Locomotive Works	" "	70
Woonsocket Co.....	" "	120
Wanskuck Co.....	" "	250
Owen & Clark.....	" "	120
Providence Dyewood Co.....	" "	125
Oriental Mills.....	" "	300
Nicholson File Co.....	" "	150
Fales, Jenks & Sons.....	Pawtucket, "	80
Greene & Daniels.....	" "	500
Conant Thread Co.....	" "	350
James M. Humes.....	" "	50
William H. Haskell	" "	25
National Rubber Co.....	Bristol, "	630
John B. Herreshoff.....	" "	40
Orion Cotton Mills.....	E.Greenwich "	165
Greenwich Print Works.....	" "	120
Harris Woolen Mill.....	Woonsocket, "	50
S. H. Greene & Sons.....	River Point, "	125
David Pike	" "	40
Rowse Babcock.....	Westerly, "	150
Babcock & Moss.....	" "	150
Thomas Stevens	Newport, "	30
Perry Mill Co.....	" "	150
William L. Wood.....	Hartford, Conn.....	30
Sharp's Rifle Manufacturing Co..	" "	250
Russell Manufacturing Co	Middletown. "	100
Edward Miller & Co.....	Meriden, "	150
Foster, Merriam & Co.....	" "	50
Meriden Malleable Iron Co.....	W. Meriden, "	35
Peck Smith Manufacturing Co...	Southington, "	85
L. Candee & Co	New Haven, "	455
Mineral Springs Mf'g Co.....	Stafford Springs, Conn....	60
Cheney Brothers.....	So. Manchester, "	200
Metropolitan Washing M'ch'e Co	Middlefield, "	45
W. C. Harding & Co.....	Stamford, "	100
Darling, Griswold & Co.....	New York City.....	40
Preston & Street.....	" "	120
G. Koch, Stoeckel & Co.....	" "	45

NAMES.	PLACE OF BUSINESS.	Horse power used.
J. & W. F. Youngs	New York City	40
M. Cohn	" "	70
J. & W. Lyall	" "	15
Toledo, Peoria & Warsaw RR. Co	" "	50
The Singer Manufacturing Co...	" "	450
James Conner's Sons	" "	20
N. Y. Daily Express	" "	20
W. P. Brown	" "	50
Ira Yeamans, Jr.	" "	250
William Wall's Sons	" "	400
C. S. Westcott & Co	" "	25
William Jessop & Sons	" "	125
C. T. Raynolds & Co	" "	110
West, Bradley & Cary Mf'g Co .	" "	175
Jones & Company	" "	150
Baxter, Bell & Co	" "	40
Christy, Constant & Co	" "	60
James H. Prentice	Brooklyn, N. Y	50
C. H. & A. T. Baxter & Co	" "	40
Utica Steam Woolen Mills	Utica, "	175
Wood & Mann Steam Engine Co	" "	70
Globe Woolen Co	" "	300
Utica Steam Cotton Mills	" "	650
Lobdell, Matteson & Co	Sherburne, "	47
H. Ross & Co	" "	120
Syracuse Iron Works	Syracuse, "	150
William A. Sweet & Co	" "	130
Newburgh Steam Mills	Newburgh, "	350
David Maydole & Co	Norwich, "	50
Wood, Clark & Hall	Fort Plain, "	20
Trenton Vise & Tool Co	Trenton, N. J	65
N. J. State Lunatic Asylum	" "	15
Osborn, Buckley & Co	Paterson, "	120
May, Rae & Co	" "	120
Ivanhoe Mf'g Co	" "	85
Lambertville Mf'g Co	Lambertville "	75
C. Meyer, President	New Brunswick, N. J	120
Sherman & Co	Philadelphia, Pa	40
W. C. Allison & Sons	" "	60
Charles Magarge	" "	80
Washington Mf'g Co	" "	700
Gloucester Mf'g Co	" "	250
John Farnum	" "	400
Henry Disston	" "	45

NAMES.	PLACE OF BUSINESS.	Horse power used.
Rittenhouse Woolen Co	Philadelphia, Pa	150
Riverside Paper Mills	" "	150
Hale, Goodman & Co	" "	50
Wm. F. Forepaugh, Jr., & Bros.	" "	40
William B. Thomas	" "	300
Dr. D. Jayne & Son	" "	55
J. E. Kingsley & Co	" "	20
James P. Bruner's Sons	" "	1000
Callaghan & Bro	" "	225
S. I. Solms	" "	175
A. Campbell & Co	Manayunk, "	600
Heft & Ogle	" "	80
Stone, Garsed & Stone	Frankford, "	100
R. Garsed	" "	400
J. Wood & Bros	Conshohocken, Pa	130
Alan Wood, Jr.	" "	130
Alan Wood & Co	" "	100
Park, Brother & Co	Pittsburgh, "	1050
Park, Painter & Co	" "	165
Lyon, Shorb & Co	" "	1200
Moorhead & Co	" "	200
Holmes, Bell & Co	Alleghany City, "	250
Montrose Manufacturing Co	Montrose, "	15
Daniel Wolfenden	Falls of the Schuylkill, Pa.	25
J. Rinek's Sons	Easton, Pa	90
Conyers Button	Germantown, "	35
S. A. Rudolph	Montgomery Co "	150
James Stephens	Chester, "	155
Charles Roberts	" "	350
John Gartside	" "	50
B. Gartside & Sons	" "	80
Amos Gartside	" "	30
John J. Green	" "	50
John Hinkson	" "	100
A. Blakely & Son	" "	70
Barton & Cotton	" "	80
Lewis & Parker	" "	100
Franklin McCrea & Co	" "	90
C. & F. J. Hinkson, Jr.	" "	20
Lilley & Co	" "	30
George Baker	" "	40
E. M. Broomall & Co	" "	35
Irving & Leiper	" "	70
N. L. Yarnall	" "	40

NAMES.	PLACE OF BUSINESS.	Horse power used.
Kirkman & Blakely	Chester, Pa.	60
J. C. & W. G. Price	" "	30
Joseph Campbell.....	" "	15
Shaw & Esrey.....	" "	70
Morton Black & Bro.....	" "	80
Joseph Baker.....	" "	130
Byram & Holt.....	" "	35
James Ledward.....	" "	65
Miller & Allen.....	" "	60
Shaw & Knowles	New Castle, Del.....	175
Mount Vernon Co.....	Baltimore, Md.....	200
Todd & Richardson.....	Louisville, Ky.....	125
E. Ball.....	Canton, O.....	75
Giles, Bro. & Co.....	Chicago, Ill.....	125
Sherman House.....	" "	20
Adolphus Meier & Co	St. Louis, Mo.....	250
H. Burden & Sons	Troy, N. Y.....	1340
John J. Zabriskie.....	Hohokus, N. J.....	50
Barstow Stove Co.....	Providence, R. I.....	50
Riverside Mills	" "	80
Fletcher Manufacturing Co	" "	515
Atlantic De Laine Co.....	" "	1225
Rowland & Ervien.....	Philadelpdia, Pa.....	165
James Rowland & Co.....	" "	600
		45,179

In the Matter of the Petition of George H.
Corliss, for extension of his Letters Patent
for Improvements in Steam Engines.

I, George H. Corliss, of Providence, in the County of Providence and State of Rhode Island, on oath depose and say, that the statements set forth in my petition herewith, are true, and that the following is a clear and exact statement of my account with said Letters Patent.

GEORGE H. CORLISS *in account with his Letters Patent of March 10th, 1849, for Improvements in Steam Engines.*

DR.		CR.	
To amounts received as royalties from builders of Engines.....	\$223,699 42	By amounts paid as per statement herewith.....	\$62,124 82
Amounts rec'd as royalties from licensees, not builders of Engines, including amounts collected from infringers	50,699 13	Amounts paid in the Sickles litigation, in lieu in part of royalties, by the several firms with which I have been connected.....	46,101 98
Amount of expenses assumed by the several firms with which I have been connected, on account of the Siekles' litigation, in lieu in part for royalties on Engines built by them prior to March 10, 1863, claimed by my opponents to be a part of my receipts.....	46,101 98	Personal services for twenty-one years in introducing the invention, furnishing plans to licensees, planning models, assisting counsel in the preparation of cases for trial, drawing specifications for my re-issued patents, personal attendance at Court during the several trials, and labor of conducting the same, on behalf of the Corliss Steam Engine Co., as defendants, and in the other trials on my own behalf in sustaining my rights under my own Patents, against intringers, at \$2,500 per annum	52,500 00
Estimated value of unsettled accounts with builders.....	11,601 96	Balance carried down	171,375 68
	<u>\$332,102 49</u>		<u>\$332,102 49</u>
To balance brought down.....	\$171,375 68		

After an experience of about twenty-two years in the introduction of these improvements into manufactories in all branches of industry, where the best engines of previous construction had been used, I know of no instance where the result in saving of fuel has been less than thirty per cent.; and this saving has been accompanied by an improved regularity in the speed, giving from five to twenty per cent. increase in production.

The value of this invention to the present users of the Engines containing the same in this country, is not less than *Two Millions of Dollars per annum*.

In 1855 I visited the steam cotton mills of Newburyport and Portsmouth, where about 90,000 spindles were in operation, and made proposals to them to replace the engines they were then using, by those embodying my improvements. The engines which I found in these mills were the best known in this country before the introduction of my invention. During this and the following year, my engines were erected in all these mills. In two of them the price to be paid by the purchasers was to depend upon the amount of fuel saved, and this saving was to be determined by an accurate test in the comparative consumption of coal for one year; the weighing of the coal being in charge of the purchasers, was a guarantee that the saving was not overstated, and yet the result of these changes was, in each instance, a saving of over thirty-three per cent. in the consumption of fuel; and the average increase of manufactured goods, arising from the improved regulation, was not less than seven per cent. Upon the basis of the results secured in the steam cotton mills of Newburyport and Portsmouth, it is *proved* that *the introduction of my improvements in a single cotton mill of 40,000 spindles, requiring*

450 horse power, effects an ANNUAL SAVING in fuel, amounting to more than MY ANNUAL RECEIPTS have been from this invention; and the cotton machinery now operated in this country by engines embodying my improvements, is more than equal to seventy mills of 40,000 spindles each.

In 1852 I furnished Messrs. Crocker Brothers & Co., of Taunton, Mass., an engine embodying my improvements, to replace one they then had in use, upon the conditions that the new engine was to do the same work with two tons of coal per day, which had required five tons per day; and failing to accomplish this saving in fuel, a forfeiture was to be made of one dollar per pound for every pound consumed per day above that reduced amount. The new engine was also to regulate its own motion under all the excessive changes in power which occur in a Rolling Mill, and thus save the employment of a man at the regulating valve; and although the work of the mill was increased about one-third by the addition of new machinery, and the power varied from 60 to 360 horse power in a minute, all these results were accomplished. A full account of this transaction is set forth in detail in the affidavit of Samuel L. Crocker, printed herewith.

A careful examination into the results of this case reveals the fact, that *this one engine*, now in its eighteenth year of service, *has been a source of more profit per annum to its owners, than these improvements have yielded me per annum, as the inventor*, in all the engines in which they are embodied in this country.

Among the users of my improvements who have joined in asking the favorable consideration of my petition, is the Wamsutta Mills Co., of New Bedford, Mass.; and I herewith submit an affidavit of the agent of the corpo-

ration, setting forth the extent to which my improvements have been adopted in their mills, and the importance of the same to their success in the use of steam power in the manufacture of cotton goods. They commenced the use of my improvements in 1848, and as they have added to their mills from time to time, they have purchased my engines, and no others. Their experience, therefore, furnishes no means of a comparison of my engine with others ; but having as data for estimate, the facts furnished by the agent in regard to the amount of power used, and the length of time such use has been continued, and applying the basis of saving realized at the Newburyport and Portsmouth mills, *it is proved* that THIS ONE CORPORATION *have already profited more by the use of my improvements, than I have ever received from my patents ; their profit being at the present time, \$228,480.00.*

The Washington Manuf'g Co., of Gloucester, N. J., furnishes another illustration of the value of my invention to the industrial interests of the country. After using other engines for several years, (one of which was a "Sickles engine,") they adopted my improvements, and now report, (as per statement of their President and Superintendent, printed herewith,) that they HAVE ACTUALLY SAVED BY THIS CHANGE, during the last fourteen years and four months, IN THE ITEM OF COAL ALONE, **\$190,705.00.**

As to the difficulties and delays encountered in introducing my improvements, I have to say that I commenced the development of my improvements in steam engines in 1846, and completed an engine embodying the same in 1848, and although this first engine effected a saving of two tons of coal per day, and demonstrated

its power of self-regulation under great changes of resistance, and gave the most perfect satisfaction to the users; yet the invention encountered so much opposition and prejudice, that few parties could be induced to adopt it. The most promising field of effort open to me was among those who were using steam engines, and knew the cost of running them. But even here, my proposals sometimes remained under consideration five years before they were accepted, and this occurred while the engines I had put in operation were constantly demonstrating that their entire cost could be saved to the users in from two to four years; and in scores of instances, negotiations were pending for two and three years, before I could succeed in introducing my improvements. The reluctance manifested by manufacturers in incurring the cost of a new engine, as also the fact, that a change in engines generally involved an entire suspension of the work in the manufactory, during the removal of the old, and the erection of the new, together with the absence of a sufficient confidence in the result to be derived from a change in their particular case, prolonged these delays in introduction. My efforts generally at first, only stimulated an attempt on the part of the owners and builders of engines of the old construction, by repairing and reëdjusting the same, and in some instances changing the boilers, to accomplish the results that I proposed to secure by my improvements.

An illustration of this occurred in Philadelphia in connection with a flouring mill manufacturing three hundred and fifty barrels per day, where some two years were occupied in this way, and after the parties had accomplished all they could, by repairs, reëdjustment and the adoption of a new set of boilers, I furnished

them with a new engine, embodying my improvements, at the regular market price; stipulating, under a forfeiture, to manufacture with this engine, using the same machinery and boilers which had been previously employed, one hundred and forty-five barrels of flour with the same amount of fuel which had been previously required for the manufacture of one hundred barrels. Within thirty days after the starting of the new engine, the parties reported one hundred and forty-seven and a half barrels as the actual result, with the same amount of coal which had been previously required for the manufacture of one hundred barrels, and paid the full price for the engine.

In the case of the Washington Manufacturing Co., alluded to, where an average annual saving of \$13,305, for the last fourteen years and four months, has been realized by the use of my improvements, I labored for about three years in inducing them to adopt the same, and at last succeeded only by guaranteeing to do the same work with four tons of coal per day, that had required eight or nine tons, and agreeing to pay \$5,000 per ton forfeiture, for every ton consumed per day over that reduced amount.

The case of Crocker Bros. & Co., to which I have already referred, is another illustration of the kind of contracts which I was obliged to enter into to secure the adoption of my invention. In this case, what I promised was equivalent to the gift of the entire engine of two hundred and fifty horse power for less than two years' saving in fuel alone; and what was actually realized in increased work and improved regulation, was equivalent to the entire cost of the engine in about fifteen months' service. And to such straits was I then

driven, that I was glad to have even such terms accepted. And this occurred more than four years after my improvements had been put in operation.

But the greatest obstacle encountered in the introduction of my improvements, arose from litigation. The first suit was brought against Corliss, Nightingale & Co., in 1850, upon a patent granted to F. E. Sickles in 1845. This suit having failed, another was instituted against the same parties, on another patent of Sickles', dated May 20th, 1842; and upon this last patent, about ninety suits were pending at one time against the users of my engines in different parts of the country. After many trials, in different forms, before the Courts of different Districts, *all these suits failed*. The owners of the said patent of 1842, being also owners of other patents of Sickles', dated in 1844 and 1845, the litigation was continued, under several reissues of the last named patents, until 1863, when the opinion of Mr. Justice Clifford, *in my favor*, practically closed the contest. Although the case was afterwards taken to the Supreme Court, it was finally dismissed without argument.

The exclusive ownership of these Sickles patents for land engines from April 30th, 1850, to the 16th October, 1852, was held by Charles T. James, who began this litigation. After that date, (1852,) all the Sickles patents for land engines, were held by Robert L. Thurston, Henry W. Gardner and Gideon G. Hicks; and these parties, including the said James, were at one time in business as manufactures of engines under the Sickles patents. Afterwards, the said Gardner and his associates, having failed in several attempts to apply the Regulator to the Sickles Cut-off, abandoned the manufacture of engines under the Sickles patent altogether;

and adopted the manufacture of a different form of engine, claimed as the invention of Noble T. Greene, (who was at one time associated with said Gardner as "Thurston, Greene & Co.") Being satisfied that these engines were infringements of my patents, I instituted suits against the users of the same in Rhode Island, and after four jury trials, without reaching any result, I reissued my Letters Patent in 1859 and filed a Bill in Equity in the District of Connecticut, against the Wheeler & Wilson Manufacturing Company, which was regarded as a test case under my patents. After a full hearing before Mr. Justice Nelson and Judge Shipman, it was decided that this Greene engine, as manufactured by these parties, *infringed four of my Letters Patent.*

The Courts of other Districts have followed this decision, and issued injunctions against the particular form of infringement which was involved in that suit.

The details of my statement of expenditures, establish the fact that I have used reasonable diligence in endeavoring to secure to myself the exclusive use of my inventions, which the law is intended to give. I have instituted proceedings, which are still pending, against other parties using engines, containing, as I believe, under different forms of mechanism, infringements of my rights under these patents. But had I undertaken *all* the suits necessary to secure such exclusive use, against *the different forms of infringement which appeared* from time to time, the expenses of such a course would have absorbed every dollar that I have received for my invention.

In presenting the foregoing statement of my account with my Letters Patent, I am able to draw an equitable line between my interest as a manufacturer of steam

engines, and my interest as the inventor of these improvements, by my account of royalties, extending over the whole period of the existence of my patents. I have never received from my associates in the manufacture of steam engines, any consideration for the use which they have made of my improvements in Steam Engines, other than that expressed in said account. My receipts for royalties include payments from eleven builders of engines, seven of whom, having manufactories in Rhode Island, Pennsylvania, Massachusetts, Delaware, New York and California, have been at liberty to build as many engines as they pleased, of any size they pleased, to be located wherever they pleased, and to get any price for the same they could; affidavits of three of whom are printed herewith. Thus, *the public have had the full benefit of an unrestricted competition between all these licensees.*

The small amount of royalties received from all other licensees, except my associates, indicate the small amount of business they were able to command. The highest royalties paid by any of these builders, prior to March 10th, 1866, was \$1.50 per square inch of area upon the piston for all cylinders under 24 inches diameter, and for 24 inches diameter and upwards, \$1.12½. Prior to March 10th, 1863, the several firms, with which I have been associated in the building of steam engines, have paid for royalties on the engines manufactured by them containing my improvements, including the sums paid prior to that date in the defense of the claims set up by Sickles, a rate greater than that paid by other builders. Since March 10th, 1863, the royalties paid by the Corliss Steam Engine Co. have been, on engines less than 24 inches diameter of cylinder, \$1.50; and on

larger engines, $\$1.12\frac{1}{2}$ per square inch of area; thus, placing them at that date on the same footing with other builders. And these rates were established by a vote of the company March 20, 1863, when my interest was $\frac{1035}{3000}$ of the stock of the company, and are still in force. The builders whose affidavits are printed herewith, agree in the statement that the profits derived from the manufacture of these engines, after paying the royalties, has not been greater than the profits derived from the general business of their several shops; and the result of an attempt on my part in 1866, to increase my income from royalties by raising the rate, is set forth in the affidavit of H. S. Fairbanks, herewith.

The vast disproportion of my receipts for royalties, between the several firms with which I have been connected, and all the other licensees together, is evidence of reasonable diligence on my part in the effort to introduce my invention, and of the fact that the balance of my account with my Letters Patent, has been materially increased by my position as a manufacturer of steam engines.

All my licensees were exempt from the responsibility, care and labor of the defensive litigation growing out of the claims of Sickles, except my associates; who, in consideration of the payment of a half license fee, assumed certain expenses as per statement herewith, while I assumed the personal labor of conducting this litigation, without which, my Letters Patent were rendered worthless. This labor consisted in preparing models, investigation of the history of the art as relating to the steam engine, assisting counsel in the mechanics and preparation of the case, procuring testimony and witnesses, personal attendance in court in the several

trials, which often monopolized my time for whole months together. And the same kind of labor and effort was required in all that portion of the litigation to which I was driven by infringers in the establishment of my rights ; and this labor has extended over a period of twenty-one years, with but little interruption, which occurred during the existence of the civil war. In addition to all this diversion from my regular business, I was necessarily involved in a continual succession of assumptions of the most hazardous contracts, which were in no sense a part of my legitimate business, as a manufacturer, but were undertaken because of my interest in these Letters Patent, and to establish their value, in order that I might secure some proper remuneration for the same. The development of the invention, in its various applications, has required a large amount of planning and drawing, which in many cases was equal to a large amount of the royalties resulting therefrom. For all this personal service, I have charged in my account the sum of \$2,500 per annum. I know that this is much below what I should have had to pay for the same service, if performed by others ; and the damage which has resulted to me as a manufacturer, in withdrawing my personal attention from the general business, has been at least *treble* the amount I have charged therefor. I deem this item of my account indispensable to a proper exhibit of the actual profits derived from my Letters Patent.

GEORGE H. CORLISS.

STATE OF RHODE ISLAND, &C., }
Providence, sc. }

In Providence, this seventh day of February, 1870,
subscribed and sworn to. Before me,

L. S.

B. B. HAMMOND,

Public Notary.

Testimony as to the Value of the Invention.

In the Matter of the Petition of George H. Corliss, for an Extension of his Letters Patent for an Improvement in Steam Engines.

I, Samuel L. Crocker, of Taunton, in the State of Massachusetts, on oath depose and say, that I am of the firm of Crocker Brothers & Co., of said Taunton. That on the 28th day of September, 1857, I wrote the Corliss Steam Engine Co. a letter, of which a printed copy is hereto annexed, marked D; and I hereby fully confirm all the statements therein made. The engine therein described is still running our Copper Rolling Mill, and in all respects gives us the same satisfaction that we then expressed.

SAMUEL L. CROCKER.

COMMONWEALTH OF MASSACHUSETTS, }
County of Suffolk, } ss.

On this 10th day of January, A. D. 1870, subscribed and sworn to before me, at the city of Boston, in the county and commonwealth aforesaid.

SAMUEL G. CURTIS,
Public Notary.

[D.]

TAUNTON, Sept. 22, 1857.

Corliss Steam Engine Co. :

GENTLEMEN,—In compliance with your request, we will make a statement in relation to the substitution of one of your improved engines, in our rolling mill, in July, 1852, in place of one of the old construction, put in by us, in the winter of 1846-7.

In March, 1852, you proposed to build and set up in our mill, within ninety days from the date of the contract, an engine which you guaranteed should be capable of driving one-third more work than we were doing. The average amount of coal then used by our engine, was about five (5) tons Pennsylvania chestnut per day. You guaranteed that your engine would do the same work with two (2) tons, or you would *forfeit one dollar per pound for every pound used above that amount.*

The new engine was to regulate its own motion, under all the excessive changes in power which occur in our rolling-mill, (this could not be accomplished with the old engine, although we employed a man constantly at the regulating valve), and be fully adapted to all the peculiar requirements of a rolling-mill, or you would remove it from our mill wholly at your own expense, after a trial by us of sixty days.

Your proposals were accepted; the engine was put in successful operation within the time specified, and came up fully to all that was proposed to be accomplished.

In your proposition, there were no specifications as to the size of the new engine; that matter being left wholly to your discretion. We were quite surprised, at the time, to find that you were putting in a 32-inch

cylinder by 6 feet stroke, under the guarantee to do a third more work than we were able to do with the old engine, which had a cylinder 38 inches diameter by 7 feet stroke. The result has shown that your improvements in the application of steam, have enabled you, with the smaller cylinder, to give the increased power required.

Although we have increased our work about one-third by the addition of machinery, and have also increased the production of our mill, by the uniformity of motion, secured by your improvements in the mode of regulation; yet our average consumption of Pennsylvania coal, when we have used it, has not exceeded two gross tons per day. Finding that our engine ran with so small an amount of steam, compared with the old engine, we tried the Rhode Island coal, which we have used from that day to the present, with entire success, at the average amount of 5,000 pounds per diem.

Our power frequently varies from 60 to 360 horse power within a minute, without perceptibly affecting the speed of the engine.

Your engine is now driving our mill as satisfactorily as ever, and we should perhaps add, that we use the same boilers which supplied steam for the former engine, without change in their setting or management, excepting that with the old engine we had to force our fires with a blower, which we have not used in making steam for the new engine.

Yours, truly,

CROCKER BROS. & CO.

In the Matter of the Petition of George H. Corliss, for an extension of his Letters Patent for Improvement in Steam Engines.

I, Thomas Bennett, Jr., of New Bedford, in the State of Massachusetts, on oath depose and say, that I have been and still am agent of the Wamsutta Mills Company of said New Bedford, manufacturing cotton goods. That we have in operation in said mills, three Corliss engines, the first of which we put in operation in our No. 1 mill, in 1848, and has since been working with an average of two hundred horse power. In the year 1853 we built our No. 2 mill and purchased the second engine from Mr. Corliss, which was put in operation the 7th of January, 1854, and has since been running with an average of three hundred and seventy-five horse power. In 1861 we built our No. 3 mill, and purchased the third engine of Mr. Corliss, which has been in operation therein since January 8th, 1862, with an average of three hundred and seventy-five horse power; and our company have now built their 4th mill, and have ordered from Mr. Corliss a fourth engine, which is nearly completed, for which seven hundred horse power will be required.

These engines, embodying the improvements of Mr. Corliss, combine the highest degree of economy of fuel with the most perfect regulation of speed; and the use of these engines has contributed largely to the success of the Wamsutta Mills Co. in the manufacture of cotton goods by the use of steam power.

THOMAS BENNETT, JR., *Agent.*

STATE OF RHODE ISLAND, &c., }
Providence, sc. }

In Providence this seventh day of January, 1870,
 subscribed and sworn to, Before me.

B. B. HAMMOND,
Public Notary.

*In the matter of the petition of George H. Corliss, for an
 extension of his letters Patent for an improvement in
 Steam Engines.*

I, John Balch, of Newburyport, in the State of Massachusetts, on oath depose and say, that I am the Treasurer of the Bartlet Steam Mills, of said Newburyport. That on the 25th day of August, 1857, I wrote the Corliss Steam Engine Co. a letter, of which a printed copy is hereto annexed, marked "F," and I hereby fully confirm all the statements therein made. The engines therein described are still running, and in all respects give us the same satisfaction that we then expressed. We have since increased the capacity of our mill, demanding an increase of power, for which we have added another "Corliss Engine," purchased of H. S. Fairbanks, agent of the Foundry and Machine Co., of Taunton, Mass.

JOHN BALCH,
Treasurer Bartlet Steam Mills.

COMMONWEALTH OF MASSACHUSETTS, }
Newburyport. } ESSEX, ss.

Be it known that on this 11th day of January, A. D. 1870, before me, I. T. Brown, a Notary Public, duly commissioned and sworn, appeared the above named John Balch, and in my presence made oath to the following statement, by him signed. In testimony whereof I have hereunto affixed my hand and notarial seal, at Newburyport, the day and year above written.

I. T. BROWN,
Notary Public.

[F.]

OFFICE OF THE BARTLET STEAM MILLS, }
 Newburyport, Aug. 25th, 1857. }

Corliss Steam Engine Co. :

GENTLEMEN,—In reply to your request for a statement in relation to the change of engines in our mills, I would say, that about two years since we were induced to make the change by your proposal to furnish us new engines for the saving of coal in five (5) years, we having previously stated to you our annual consumption of fuel. Afterwards, at our solicitation, you gave us the market price for the work, allowing us to make a choice between that price and the saving of coal, which decision was to be made before the new engines were operated.

We hesitated for some time, as to which way the payment should be made, for we learned upon inquiry, that no mills in the country were doing so well as ours, except those that were driven by engines embracing Mr. Corliss' improvements. We, however, decided to pay your market price for the work, and the result of about

two years' running shows, that we have saved a handsome sum of money by settling in that way.

Our two mills contain 17,360 cotton spindles, requiring about 200 horse power, and we use the same boilers which were put in when the mills were built. Our arrangements for heating remain the same, and we continue the same arrangement of gearing; consequently we have the best opportunity of testing the merits of your engines, as the change was made solely in the engines.

We have gained a great advantage from a more perfect regulation of speed.

I would simply add, without going into the details of the consumption of fuel, that we are obtaining fifty (50) per cent. more work from each pound of coal consumed than we did with our former engines.

Respectfully yours,

JOHN BALCH,

Treasurer Bartlet Steam Mills.

In the Matter of the Petition of George H. Corliss, for an Extension of his Letters Patent for an improvement in Steam Engines.

I, E. S. Lesley, of Newburyport, in the State of Massachusetts, on oath depose and say, that I am agent of the Ocean Steam Mills, of said Newburyport. That on the 17th day of August, A. D. 1859, I wrote the Corliss Steam Engine Co. a letter, of which a printed copy is hereto annexed, marked "E," and I hereby fully confirm all the statements therein made. The engine therein described is still running, and in all

respects gives us the same satisfaction we then expressed. In 1867 we made an addition to the mill, doubling its capacity, the power for which addition is derived from another "Corliss Engine," of the same dimensions and construction as that referred to in the aforesaid letter.

EDWARD S. LESLEY,
Agent.

COMMONWEALTH OF MASSACHUSETTS, }
Newburyport, ss.

In Newburyport this 11th day of January, A. D. 1870, subscribed and sworn to before me. Witness my hand and notarial seal the day and year above written.

I. T. BROWN,
Public Notary.

[E.]

OFFICE OF THE OCEAN STEAM MILLS, }
Newburyport, Aug. 17, 1859. }

Corliss Steam Engine Co. :

GENTLEMEN,—I comply with your request, and below give a statement of the facts you call for.

Our mill contains 9,408 spindles, "Mason's Self-Acting Mules," 208 looms, and we make No. 35 yarn—30 in. print cloths.

Our former engines were considered first-class machines, and were perfectly satisfactory to us until we received your proposals. The proposals were under consideration with us long enough to waste coal to the amount of one-half the cost of the change of engines, before our company could be induced to abandon the former engines. You proposed to take the engines as

they stood, and furnish the new one for the saving of fuel for 2 1-2 years running, or the sum of \$3,000 cash.

No change was made in the boilers, neither was any alteration made in the heating apparatus, or anything connected with the use of steam, excepting the engine proper.

We decided to give you the \$3,000, which has proved a good operation for our company, as the saving of fuel will amount to about \$3,000 in two (2) years.

In addition to the saving of fuel, we have experienced a great advantage resulting from a more perfect regulation of the speed of the engine, which has given us a larger production of cloth.

Our average consumption of coal with the former engines was 6,000 lbs. per day; this was for the engine, heating the mill, and all other purposes for which we require steam. The average amount used by the new engine, for the same purposes, is 4,200 lbs. per day.

Yours, &c.,

E. S. LESLEY,

Agent Ocean Steam Mills.

In the Matter of the Petition of George H. Corliss, for an extension of his Letters Patent for Improvements in Steam Engines.

I, Henry S. Fairbanks, of Central Falls, in the county of Providence and State of Rhode Island, on oath depose and say, that I am Agent and Treasurer of the Foundry and Machine Co., of Taunton, Mass., and have been

since 1856. In that year (1856,) the said company commenced the manufacture of steam engines embodying the improvements patented by Mr. George H. Corliss, under an arrangement for the payment of certain royalties; during which time the, said company have manufactured and sold fifty-seven engines, embodying said improvements, and have paid the said Corliss as royalty on the same, the sum of twenty-two thousand seven hundred and three and $\frac{5}{100}$ dollars, \$(22,703.05); one thousand eight hundred and eighty-seven and $\frac{41}{100}$ dollars of which was paid prior to the 10th day of March, 1863, and there is now due the said Corliss on this account, the sum of two thousand and thirty-one and $\frac{2}{100}$ dollars, (\$2,031.02.) That during the whole period from 1866 to the present, said company has been under no restrictions from the said Corliss, as to the sizes of the engines, localities where they were to be used, or price to be received therefor. The profits we have received for these engines after paying the royalties, have not been greater than that derived from other branches of our business. Some parties with whom we were negotiating for the sale of some of these engines in 1866, refused to pay the increased price required, to cover the increased royalty then demanded by Mr. Corliss, and the order for the work was lost on this account; and recently, we lost an order for an engine of one hundred horse power, because we would not make a concession of fifty dollars from a price, which was as low as we could afford to make it after paying the royalty.

The said company have no arrangement or understanding covering the future use of said improvements. In the course of our business we have had occasion to substitute the "Corliss engine," for engines of ordinary

construction regulated by a throttle valve, and in no case has the saving of fuel resulting from said substitution been less than thirty per cent., and a better regulation of the speed of the engine attained.

H. S. FAIRBANKS, *Agent*.

COMMONWEALTH OF MASSACHUSETTS, }
Bristol County, ss. }

January 24th, 1870. Then the above named H. S. Fairbanks made oath to the truth of the above statement by him subscribed, Before me.

JAMES P. ELLIS, *Notary Public*,

Within and for the County and State aforesaid.

In the Matter of the Petition of George H. Corliss, for an Extension of his Letters Patent for Improvements in Steam Engines.

I, Lewis Miller, of Chester, in the State of Pennsylvania, on oath depose and say, that I am a member of the firm of Miller & Allen, of said Chester, which firm has been engaged since the spring of 1859, in manufacturing steam engines embodying the improvements of the said George H. Corliss, during which time we have built one hundred and three Corliss engines, on which we have paid the said Corliss for royalties, the sum of five thousand six hundred and eighty-four dollars and ten cents, (\$5,684.10); and there is now due to him the sum of nineteen thousand four hundred and eighty-eight dollars and fifty cents, (\$19,488.50,) on this account. The saving of fuel by the use of these Corliss engines over the best engine which has been by us replaced by them, was not less than thirty-three per cent., and over

many of the engines replaced by the Corliss engine, the saving was much greater. There are now running in our town, thirty-one Corliss engines, out of some thirty-seven in all. The introduction of these engines, in almost every instance, has required a great amount of personal solicitation on our part, and in many cases, a guarantee of a large saving in fuel. The business of our firm is the building of boilers, shafting, gearing, saw mill and rolling mill machinery, and steam engines. The latter branch constitutes about one-third of our manufacture, and the profits on the same, after paying our royalties, have been less than that received upon the other branches of our business.

Since 1859 we have been under no restrictions from the said Corliss as to the sizes of the engines, localities where they were to be used, or price to be received therefor, and we have no arrangement covering the future use of said improvements.

LEWIS MILLER.

Subscribed and sworn to before me on the 20th day of January, 1870, at the city of Washington, D. C.

JAMES H. CAUSTEN,

Notary Public.

OFFICE OF THE WASHINGTON MANUF'G Co., }
Gloucester, N. J. }

Hon. George H. Corliss, Providence, R. I. :

DEAR SIR,—In response to your request for a brief statement of the results realized by us through the introduction of your improved engines in our mills at Gloucester, N. J., we have the pleasure of stating the follow-

ing facts. We have two mills requiring about 360 and 250 horse power, respectively. In 1854, you made us a proposal to furnish one of your engines for our No. 2 mill, guaranteeing, under a heavy forfeiture, to furnish the power of this mill with less than half the amount of coal then required. The terms of your guaranty were more than fulfilled by the operation of your engine; this result induced us to order of you new engines for our No. 1 mill, which were put in during the succeeding year, and the result of this change was equally satisfactory. By reference to our accounts, we find that we have realized by the use of your engines during the time they have been in operation, an actual saving compared with the engines formerly used, of no less than thirteen thousand three hundred and five dollars (\$13,305.00) per annum, netting for the fourteen years and four months, (14 years and 4 months)—average time since starting of the engines—an aggregate of one hundred and ninety thousand seven hundred and five dollars, (\$190,705.00,) in the single item of coal. To this we add other advantages, such as uniformity of speed and increased reliability in the operation of our mills, which your engines have enabled us to experience.

In justice to yourself we would further state, that our former engines were made by first class builders, and were always considered to be as good as any in the market. In making our estimates of savings, we have not based our calculations upon any experimental trials, but upon the actual products of our mills and the actual weights of coal consumed for whole years taken together, both with the original engines and with the "Corliss" engines; coal being estimated at five dollars (\$5.00) per ton.

Yours truly,

(Signed,)

DAVID S. BOWEN, *President.*

H. F. WIST, *Superintendent.*

INDUSTRIAL WORKS, PHILADELPHIA, PA., }
 January 29th, 1870. }

To the Honorable Senate and House of Representatives of the United States, in Congress assembled :

The undersigned, having been informed of the pendency of the petition of George H. Corliss, of Providence, R. I., for an extension of his Letters Patent for "Improvements in Steam Engines," and knowing by the use of said improvements that they are of great practical value, and *believing that the industrial interests of the country would be best subserved by continuing the patent in Mr. Corliss' hands*, do join in an earnest request that his application may receive the favorable consideration of your Honorable body.

(Signed,) BEMENT & DOUGHERTY.

In the Matter of the Petition of George H. Corliss, for an Extension of his Letters Patent, for improvement in Steam Engines.

I, William A. Harris, of Providence, in the County of Providence, and State of Rhode Island, on oath depose and say, that I am engaged in the manufacture of steam engines embodying the improvements patented by George H. Corliss, and have been so engaged since August, 1864, during which period I have manufactured fifty-seven engines with said improvements, and have paid the said Corliss on account of the Royalties, the sum of six thousand dollars, and there is still due the said Corliss on said account, a balance of eighty-four hundred and sixty-two dollars and twenty-four cents; and during the said time I have been under no restric-

tion whatever from the said Corliss, as to the sizes of the engines, localities where they were to be used, or price to be received therefor. That I have no arrangement or understanding with the said Corliss, covering the future use of said improvements. In the month of March, 1868, I contracted with the Meriden Britannia Co., to furnish them a "Corliss engine." This engine was afterwards tried in competition with another engine of the same size, each having a cylinder twenty inches in diameter, and a stroke of four feet. A printed condensed report of said trial I here annex, marked C. I was present at said trial, and know that the results stated in said condensed report are true; and I do not know of any better engine regulated by a throttle valve than the one brought in competition with the Corliss engine on said trial.

WILLIAM A. HARRIS.

STATE OF RHODE ISLAND, &C., }
Providence, sc. }

In Providence, this twelfth day of January, A. D. 1870, subscribed and sworn to, Before me.

B. B. HAMMOND, *Public Notary.*

[C.]

Extract from the Condensed Report of a trial between a Corliss Steam Engine, manufactured by William A. Harris, of Providence, R. I., and an engine of the ordinary construction, built by Lowe, Pacific Iron Works, Bridgeport, Connecticut.

"For the past four weeks a trial has been going on between the Lowe and Harris engines, at the Plate Works on State street. Mr. Lowe was present a portion of the time, and made a personal trial of both engines. He began what may be termed an informal trial with his own engine, commencing on the morning

of the 24th of August. At the expiration of Saturday, the 29th, his engine had expended 39,990 lbs. of coal, and rolled 1,248, 8 by 12 inch plates of 9-16 inch thickness, down to the thickness required for the manufacture of Britannia goods. The next week, commencing on Monday, the 31st, he made a trial of the Harris new engine. On the day ending September 5th, the new engine had rolled 1,375 plates, and burnt 25,810 lbs. of coal. The new engine it will be seen had, therefore, consumed 14,180 lbs. of coal less than the Lowe engine, and yet had turned out 127 plates more than it had, although during the running of the Harris engine, the rolls were not in use for seven hours.

The informal trial was pretty conclusive, and clearly demonstrated the superiority of the Corliss engine. Before Mr. Harris commenced *his* trial, he had one boiler that supplied steam for other purposes than motive power detached, so that the steam generated by said boiler was not used in connection with the engines. The fuel under the three remaining boilers was carefully weighed and accounted for. With Mr. Lowe's informal trial the boiler was not detached, which accounts for the excess in figures in the two previous weeks.

On the 7th, Mr. Harris began *his* trial of the two engines. He commenced with his own engine, and at the end of the week had consumed 18,875 lbs. of coal, and had rolled 1,532 plates. During four days of the next week Lowe's engine had consumed 21,635 lbs. of coal, and had rolled 700 plates. The average consumption of coal per day upon the Harris engine is 3,146 lbs. ; the average on the Lowe machine being 5,409, a saving by the former of 2,263 lbs., or 41 and 8-10 per cent. Mr. Harris ran his engine three days with two boilers only, instead of three. An attempt was made to run Lowe's engine with two boilers, but after working an hour and three-quarters, the engineer was compelled to attach the third boiler. The speed of the new engine is fifty-five revolutions per minute, and, at one time, Friday, the 11th instant, an indicator diagram was taken, showing an increase of the load in four revolutions of 50 37-100 horse-power without affecting the speed. On this day there were 330 plates turned out, being the largest number ever rolled at these works. Attached to both engines is a "counter." This machine faithfully records every revolution."

In the Matter of the Petition of George H. Corliss, for an Extension of his Letters Patent for Improvements in Steam Engines.

I, Edward W. Raynsford, of North Providence, in the County of Providence, and State of Rhode Island, on oath depose and say, that I have been book-keeper for the Corliss Steam Engine Company since January, 1864, and that I am familiar with the business of that company and have been since the above named date; that the Royalties have been credited to the account of George H. Corliss, for his improvements in steam engines, upon every engine sold by the company containing these improvements, and that such Royalties from the 10th day of March, 1863, to the present time, amount to one hundred and fourteen thousand four hundred and eighty-five dollars and 41 cents, (\$114,485 41.); that the Royalties of the past year amounted to seven thousand and ninety-nine dollars and eighty-eight cents, (\$7,099 88,) which is included in the above; that the aggregate amount of business done by the company since March 10, 1863, is more than three times as much as the amount charged for the steam engines on which Royalties have been credited; that the said Corliss has a Patent for an improved boiler, which is built exclusively by the Corliss Steam Engine Company, and that the Royalties have been credited to his account since 1863, upon each of the boilers built under that patent, and that such Royalties since March 10th, 1863, amount to sixteen thousand nine hundred and nineteen dollars and fifty cents, (\$16,919 50,) of which sum three thousand nine hundred and forty dollars and sixty-three cents, (\$3,940 63,) was credited to him during the past year; and that the said Corliss holds other Letters Patent for improvements which are used by the company in their manufactures, for the use of which no Royalties have been credited to him.

ED. W. RAYNSFORD,

STATE OF RHODE ISLAND, &C., }
Providence, sc. }

In Providence, this seventh day of January, 1870, subscribed and sworn to, Before me.

B. B. HAMMOND, *Public Notary.*

In the matter of the Petition of George H. Corliss, for an Extension of his Letters Patent for improvements in Steam Engines.

I, William Corliss, of North Providence, in the County of Providence, and State of Rhode Island, on oath depose and say, that I am the Treasurer of the Corliss Steam Engine Company, and have been acting in that capacity since January 1st, 1864. That I have read the affidavit of Edmund W. Raynsford, in this case, and that the same is true. The rates at which the Royalties have been credited to George H. Corliss, for the use of his patented improvements, were fixed by vote of the stockholders, March 20th, 1863, when he owned less than one-half of the stock of the Corporation. These rates being a large advance upon those formally allowed on this account by the company, occasioned dissatisfaction on the part of one of our largest stockholders, and became one of the causes of his retirement from the Company. In the fall of 1863, being desirous of aiding the Government, by request of the Secretary of the Navy, we entered into a contract with that department to furnish the steam machinery for two war vessels, of three and four thousand tons burden, respectively. These contracts involved the construction of two pairs of very large engines, with boilers and other appurtenances, aggregating in weight not less than fifteen hundred tons. To execute which as speedily as possible, we were compelled to make large additions to our works, involving an outlay of some two hundred and fifty thousand dollars—and to divert to a great extent the facilities and resources of the Company for a period of several years, from that part of our business in which the inventions of Mr. Corliss were used.

WILLIAM CORLISS.

STATE OF RHODE ISLAND, &C., }
Providence, sc. }

In Providence, this 12th day of January, A. D. 1870, subscribed and sworn to before me

B. B. HAMMOND, *Public Notary.*

Remarks of E. N. Cope, Philadelphia, Pa., after signing :

"I have signed the paper with very great pleasure, believing that your improvements have added more to the development and wealth of the country than many other inventions that have attracted more attention and are regarded by the public as of paramount importance. I care not what your profits have been ; you are still, in my opinion, entitled to further remuneration, and you have my best wishes for the success of your present application."

Remarks of Trenton Vise and Tool Co., Trenton, N. J., after signing :

"We shall be glad if we can in any way aid you, believing, as we do, that you are justly entitled to reap abundant remuneration for your valuable improvements. We will save this year over last more than \$2,000 in coal, and do one-third more work."

Remarks of S. Oliver Breed, Lynn, Mass., after signing :

"I had satisfied myself of the justice of your claim for an extension of patent previous to receiving your circular, and was glad of an opportunity to express it. Our engine is working admirably."

Remarks of William B. Thomas, Philadelphia, Pa., after signing :

"Patentees of machinery of the merit of your engine are rarely sufficiently compensated."

U. S. PATENT OFFICE, }
March 9th, 1863. }

In the matter of the application of George H. Corliss, for the extension of six patents reissued to him on the 12th of July, 1859, for improvement in Steam Engines.

The original patent was granted on the 10th of March, 1849, reissued on the 10th of May, 1851, and reissued, divided into six patents, on the 12th of July, 1859. The novelty of the invention has thus been three times affirmed by the office; and four of the six patents have passed the ordeal of a most thorough and able examination in the Circuit Court of the United States for the District of Connecticut, the other two having never been controverted. The court was composed of Judge Nelson of the Circuit, and Judge Shipman of the District ; the counsel on both

sides were among the most distinguished attorneys of the country. Experts were examined, models and drawings were exhibited, and every means which the highest abilities and great legal sagacity and experience could suggest, were used to secure a correct decision. The court, after a thorough investigation, decided that the invention was "new and patentable."

Incident to the present application for an extension of these patents, the question of novelty has been again submitted to the decision of this office, and the Examiner-in-charge has, in an original report, made a statement of facts and deductions therefrom, strictly accordant with these several prior decisions.

All the inventions alleged by the present remonstrants to interfere with the claims of the petitioner were before the court in the contest already referred to, and were minutely described and compared with or contrasted to his invention. As nothing has been found in the record which appears to justify any exception to the decision so uniformly reiterated, it is not now necessary to recite descriptions of the several inventions, nor so analyze them for the purpose of showing the essential difference of points alleged to be substantially the same. It is deemed sufficient for me to say that, viewing the invention comprehended in the petitioner's several reissued patents, by the light of the entire record, and with the most careful consideration of the objections and arguments of the remonstrants and their learned counsel, I can find no sufficient reason for refusing the prayer of the petitioner, because of any lack of patentable novelty in his invention, whether with respect to the precise combination described in the several claims, or to their equivalents.

No question has been raised in relation to the usefulness and importance to the public of this invention; nor, in view of the testimony elicited, and of the admissions made, can such question be reasonably entertained, except in its bearing upon the question of the adequacy of the remuneration already realized by the inventor, in relation to which it may be affirmed that, the invention being confessedly of vast public value and importance, and the ingenuity, time, persistence in labor, capital invested originally, and expense incurred in introducing it to the public, and in defending the right guaranteed by the patent laws, all being great, the remuneration already received, as shown in the statement of the petitioner, is regarded as falling far short of an equitable reward.

It is therefore ordered, that the said letters patent, numbered respectively 763, 759, 760, 758, 861, 762, and reissued to

George H. Corliss on the 12th of July, 1859, be and the same are hereby extended for the term of seven years, from and after the expiration thereof.

W. P. HOLLOWAY,
Com.

The American Academy of Arts and Sciences award the Rumford Medal to Mr. Corliss for the improvements in Steam Engines, covered by these Letters Patent.

PRESENTATION OF THE RUMFORD MEDALS.

By the letter dated July 12, 1796, addressed to John Adams, Count Rumford requested the American Academy of Arts and Sciences to accept the five thousand dollars in United States' stock, the interest to be applied to premiums, to be given to the authors of the most important discoveries or useful improvements, which shall be made in any part of the continent of America, or in any of the American islands, on heat or light, the preference always being given to such discoveries as shall, in the opinion of the Academy, tend most to promote the good of mankind. To be given in two medals, one of gold and one of silver, together of the intrinsic value of three hundred dollars. At a meeting of the Academy held in this city last evening, these medals were presented to Mr. George H. Corliss, of Providence, R. I., for his improvements in the steam engine. The presentation was made by Dr. Asa Gray, President of the Academy, with the following remarks :

ADDRESS OF THE PRESIDENT.

Gentlemen of the Academy :

At the last anniversary meeting, after a careful investigation by your appropriate committee, you awarded the Rumford medal to Mr. George H. Corliss, for improvements of the steam engine. The gold medal and a silver duplicate have been struck and are now before us. The inventor whose genius you have thus recognized has responded to our call, and is now present. If it be your pleasure these medals will now be consigned to his hands.

Mr. Corliss, the trust which our countryman, Count Rumford, charged this Academy to administer, empowered it to award these medals "to the author of any important discovery or useful improvement on light or on heat, which shall have been made and published by printing, or in any way made known to the public, in any part of the continent of America, or of any of the American islands; preference being always given to such discoveries as shall, in the opinion of the Academy, tend most to promote the good of mankind."

As this is only the fifth occasion since the foundation of the trust upon which this premium has been given, it may well be inferred that the Academy has in no case bestowed it inconsiderately.

It has required the discovery or invention to be real, original and important. It is not restricted to considerations of direct practical benefit, but it may, as it

did in the first instance, in the case of the oxyhydrogen blow pipe, honor a discovery of much scientific interest, the uses of which are limited. It would not hesitate to crown any successful, however recondite or theoretical investigation within the assigned domain, being confident that no considerable increase of our knowledge of the laws and forces of Nature is likely to remain unfruitful. But the Academy rejoices when, as now, it can signalize an invention which unequivocally tends to promote that which the founder had most at heart, and commended to our particular regard, the material good of mankind.

Without entering into details, it will be possible to state the ground upon which the present award has been made. It is for the abolition of the throttle valve of the steam engine, and the transference of the regulation by the governor to a system of induction-valves of your own invention; with the advantage of a large saving in fuel, and, what is often more important in manufacturing industry, the maintenance of perfectly uniform motion under varying work.

Previous to your improvements the regulation of the power and velocity of the steam engine was universally effected by an instrument placed in the steam pipe, well named the throttle valve, being used to choke off the steam in its passage from the boiler, to reduce more or less its pressure before it was allowed to act within the engine. Avoiding this wasteful process, your engine embodies within itself a principle by which it appropriates the full, direct and expansive force of the steam, and measures out for itself at each stroke, with the utmost precision, the exact quantity necessary to maintain the power required.

In the most approved engines previously used for manufacturing purposes, the valves employed were comparatively difficult to operate, too far from the piston, and in other respects unfit for working in connection with the governor. Their abandonment and the substitution of others suitable for the purpose that you had in view, demanded an entire change in the structure of the engine.

In the reconstruction, your mastery of the resources of mechanism is conspicuously shown. You introduced four valves to the cylinder, two for the induction and two for the eduction of the steam; and by your device of a wrist-plate, you give to each valve a rapid motion in opening and closing, and a slow motion after the closing has been effected, thus securing a perfection in valve movements never before attained. The special object of these changes, and the *gist* of your invention, was to place the induction valves under the control of the governor, by which they are operated in opening through a mechanism from which they are released earlier or later in the stroke of the piston, according as more or less power is demanded of the engine,—the governor, with extreme sensibility, determining the point where the supply of steam should be cut off. Thus, at every stroke of the piston, just so much steam is accurately meted out to the cylinder as is needed to maintain uniform velocity, and left to expand then, and by its expansion develop the maximum of propelling force.

Allow me to read to the Academy a brief account of the Corliss engine, by

one of the most eminent of British engineers, Mr. J. Scott Russell, which must needs be free from personal or national prepossession. It is from one of the official reports on the Paris Universal Exhibition of 1867 :

“ A third remarkable engine is American, both in invention and execution, and forms perhaps the most remarkable feature of the American department. It exhibits thoughtful design, ingenious contrivance, refined skill and admirable execution. It is singularly unlike an English engine. It has four ports on four different parts of the cylinder, two on one side and two on the opposite, each worked by a separate mechanism. These ports are worked by valves, not sliding, like our own, on flat surfaces, but sliding valves on cylindrical surfaces. Close up to the cylinder, these valves cut off the steam with scarce a particle of waste room, and so economize to the utmost the high pressure steam which they admit, and which they use as expansively and as sparingly as possible. The mechanism by which these valves are moved, is to our eye outlandish and extraordinary ; but it is, in truth, refined, elegant, most effectual and judicious ; it spares steam to the utmost, but develops what it uses to most effect. Then it proportions in an admirable way the doses of steam it serves out to the continually varying quantity of work the engine has to do. The mechanism of its mechanical governor is wonderfully delicate and direct ; the governor is sensitive to the most delicate changes of speed, and feels the slightest demand upon the engine for more or less work and steady speed. A mechanism as beautiful as the human hand releases or retains its grasp of the feeding-valve, and gives a greater or less dose of steam in nice proportion to each varying want. The American engine of Corliss everywhere tells of wise forethought, judicious proportion, sound execution, and exquisite contrivance.”

It appears that within the twenty years since this machinery was perfected, more than 1,000 engines of the kind have been built in the United States, and several hundreds in other countries, giving an aggregate of not less than 250,000 horse-power ; that as to economy of fuel, evidence has been afforded to the Rumford committee, showing a saving over older forms of engine of about one-third. As to its other crowning excellence, uniformity of velocity, the purchasers of one of the engines, now in its eighteenth year of service, certify that, with the power varying from 60 to 360 horse-power within a minute, the speed of the engine is not perceptibly affected.

It is worth noting that when these medals were voted to you, Mr. Corliss, just a century had passed since James Watt first patented his improvements of the steam engine. The vast results of these improvements—the difference between the engine when Watt found it and when he left it—make one of the most important chapters in the history of applied science. It is a great thing to say, but I may not withhold the statement that, in the opinion of those who have officially investigated the matter, no one invention since Watt’s time has so enhanced the efficiency of the steam engine, as this for which the Rumford medal is now presented to you.

If Watt, or his partner, Bolton, could boast that they held the supply of that which almost everybody longed to have, *power*, you may justly felicitate yourself, and permit us to felicitate you upon your ability to supply a greater

amount of steam power for the expenditure, and an exacter nicety in its governance, than any of your predecessors.

In acknowledgement of this benefit, the American Academy, administering Count Rumford's trust, now, by the hands of its presiding officer, presents to you these honorable testimonials of its high appreciation of what you have done. And the Fellows here assembled join with me, I am sure, in most sincere and hearty wishes that you may long enjoy this and similar distinctions along with more material rewards of your genius and skill,—hoping also that these may still be fruitful in yet other inventions, redounding to your honor and advantage and to the promotion of the good of mankind.

Extract from Reports of the U. S. Commissioners of the Paris Universal Exposition of 1867. Printed at the Government printing office in Washington, D. C., 1869, “pages 54, 55 and 59.”

CORLISS'S ENGINE.

The Corliss Steam-engine Company, of Providence, Rhode Island, have sent a 30 horse-power horizontal engine, finished with all the mechanical refinement for which their works are justly celebrated. This engine has a large fly wheel which serves as a pulley for the broad driving belt; the frame is light and directly connects the main pillow-block with the head of the cylinder. No massive bed-plate is required for its support, but merely a solid foundation, on which may rest the cast-iron legs bolted to the pillow-block and the cylinder. There are four valves, two steam and two exhaust, placed at the extreme ends and directly upon the bore of the cylinder; being made independently adjustable, it follows that the time of commencement, extent, and rapidity of the movement of each may be arranged accurately to correspond with the theoretical requirements. Motion is imparted to them by a single eccentric acting through the medium of a vibrating disk, sometimes called a “wrist-plate,” from which radiate the valve connections. Apart from the simplicity of the device, an important advantage is gained in the utilization of the crank motion's known irregularity, to give the valves a rapid motion at the instant of opening or closing. The closing movement of the liberated steam-valves is effected by straight steel springs, coiled upon an arm of gentle curvature, whereby undue tension is avoided and a fulcrum always furnished for the action of the springs. Air “dash-pots” arrest the motion of these springs when released. In the mechanism per-

taining the steam-valves is embodied a provision whereby in the course of its ordinary reciprocative movement (and at *any* point of the same) the parts directly and permanently connected with the valve may be detached from the control of the “wrist-plate” and surrendered to the action of the steel spring. This detachment is effected by the impinging of a certain movable arm, or “latch,” (forming part of the opening mechanism of the valve) against a “stop” connected with and held in position by the governor. By this contact a slight deflection of the moveable arm is caused, resulting in such a disengagement of the apparatus, that while the parts impelled by the “wrist-plate” continue their movement unimpeded, the valve, on the contrary, becomes subject to the tension of the bent spring, which instantly draws it over the port. The detachment and consequent closing of the steam-valves is thus made dependent upon the position of the governor, while the latter, having no labor to perform, remains sensitive to the changes in speed. This engine, on account of its perfectly noiseless automatic motion; the extreme sensitiveness of its cut off; its graceful and carefully studied proportions, as well as its highly polished surfaces, has attracted marked and appreciative attention. In a comparison of the different classes exhibited, it is significant to observe how minutely its features have been copied by noted builders of other nations, as indicative of the esteem with which they regard its novelties.

The three most notable copies of the Corliss engine principle are by Messrs. Hick, Hargraves & Co., of Bolton, England, Messrs. Gebrüder Sulzer, of Winterthur, Switzerland, and Mr. A. Duvergier, Lyons, France.

STATEMENTS.

STATEMENT

Showing the amounts I have received from different persons and parties for license fees, for the right to use my inventions, including amounts collected from infringers.

Goss & Lombard.	Before extension.....	\$720 28	
	Since “	5,127 28	5,847 56
J. M. Poole & Co.	Before “	1,544 81	
	Since “	2,384 50	3,929 31
Wood & Mann Steam Engine Co.	Since extension..		2,052 00
Atlantic Works.	Before extension.....		942 00
S. C. Forsaith.	Since “		552 12
Woodruff & Beach.	Before “		250 00
C. & J. Cooper & Co.	Since “		700 00
H. S. Fairbanks, Agent.	Before extension.....	1,887 41	
	Since “	20,815 64	22,703 05
William A. Harris.	Since extension.....		6,000 00
Miller & Allen.	Before “	2,558 92	
	Since “	3,125 18	5,684 10
Corliss, Nightingale & Co.	Before extension.....		230 00
Corliss & Nightingale.	“ “		23,782 13
Corliss Steam Engine Co.	“ “	36,541 74	
	Since, “	114,485 41	151,027 15
Expenses assumed by Corliss, Nightingale & Co., Corliss & Nightingale, and the Corliss Steam Engine Co., on account of the Sickles litigation in lieu in part for royalties on engines built by them prior to March 10th, 1863. Claimed by my opponents to be a part of my receipts.....			
			46,101 98
Estimated value of unsettled accounts with builders.....			11,601 96
Perry Mill Co.....			600 00
J. C. Peckham.....			308 00
Eben Hobbs, Agent			762 00
James Hill & Co.....			156 00
Chickering & Sons.....			678 00
N. E. Butt Co.....			424 51
Boston Linseed Oil Co.....			508 00
George A. Stone.....			5,800 00
William M. Gray			169 50
Camden Iron Co.....			600 00
Amount carried forward.....			\$223,699 42

Amount brought forward.....	\$223,699 42
Gardner Chilson.....	156 00
Wheeler & Wilson Manufacturing Co.....	2,500 00
Wilcox & Whiting	50 00
R. S. Newbold.....	275 00
Augustus Chase.....	675 00
Taunton Locomotive Co.....	402 00
Jesse Eddy & Son.....	750 00
Washburn & Moen.....	5,650 00
Providence Horse Nail Co.....	625 00
Providence Steam Marble Co	325 00
Dexter & Brothers.....	1,150 00
Wasson Manufacturing Co.....	800 00
N. Y. & N. H. Railroad Co.....	450 00
Cocheco Manufacturing Co	2,400 00
Taunton Iron Works Co.....	359 00
Edward Pearce and others.....	625 40
Providence Rubber Co	827 40
Attleboro' Steam Power Co.....	450 00
Thomas A. Richardson.....	480 00
Robert Rodman.....	344 32
Lowell Railroad Co.....	625 00
Worcester Woolen Mills	1,000 00
Charles Robinson, Treasurer.....	2,602 00
George B. Perry & Co.....	200 00
C. Cowles & Co.....	450 00
David Brayton.....	1,000 00
Housatonic Railroad Co.....	450 00
Newport Planing Works.....	450 00
W. D. Bishop, Treasurer.....	162 50
Jewell Brothers.....	1,816 00
U. S. Warehouse Co.....	2,034 00
Alonzo Taylor.....	314 00
George T. Newhall.....	525 00
Richmond Manufacturing Co.....	800 00
Gilbert Bush & Co.....	1,000 00
Charles Parker.....	1,016 00
Hubbard & Whitaker.....	239 00
George S. Cady.....	1,265 00
Burr & Co	450 00
John Davol	1,525 50
Fall River Planing Works.....	450 00
Boston Flax Co.....	625 00
James Arnold	450 00
Lounsbury Bissell & Co.....	1,000 00
Union Horse Shoe Co.....	950 00
Total	<u>\$322,102 49</u>

STATEMENT.

*Showing Expenses paid in defending Suits instituted on the Sickles' Patents,
and in resisting the extension of one of them.*

1849.

July—Thomas Ewbanks, for copies of Sickles' patent.....	7 00
B. R. Curtis, retaining fee.....	50 00

1850.

May—Phineas Bennett for expenses.....	100 00
June—Copies from Patent Office.....	7 20
July—Copy of notice of steamer Despatch.....	3 00
August—Phineas Bennett, balance for expenses and time, making models.....	390 00
October—Expenses of Mr. Bartholomew to New York.....	3 00
Do. “ do. from do. 	5 51
December—W. C. Hibbard, bill services as expert.....	40 05
E. Williams, bill time and expenses from New York..	15 00
Isaac Thurber, for services.....	6 00
Telegram to Watson & Renwick.....	70
Jos. Knowles, bill printing fifty copies depositions, &c.	15 00
Cost of models.....	91 33

1851.

January—L. S. Wood, bill carriage hire for Mr. Lee.....	2 50
February—Simeon Borden, for retainer.....	20 00
June—Freight on model from Boston.....	50
Franklin F. & Mch. Co., bronze castings for models.....	2 80
July—Sundry messages per telegraph.....	5 64
Expenses of Bartholomew from New York.....	8 00
Do. “ E. J. Nightingale to Boston.....	2 87
Do. “ Cornell, Brown & Corliss to Newport... ..	4 50
Do. “ Bartholomew, Clark, Williams, Bennett & Corliss from Newport.....	4 50
E. Williams, for time and expenses as witness.....	27 50
E. Bartholomew, “ “ “ 	27 50
Ocean House, bill of board counsel and witnesses.....	208 80
Earl House, bill of board for Williams and Bartholomew..	3 00
J. Barstow, sundry passages to Newport.....	4 00
G. W. Jackson, charges summoning witnesses, &c.....	139 75

Carried forward.....	<u>\$1,195 65</u>
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Brought forward.....	\$1,195 65
August—A. Caswell, expenses.....	5 00
J. H. Clark, expenses.....	8 52
W. C. Hibbard, bill.....	134 45
December—Cost of models.....	120 84
1852.	
July—Isaac Thurber, services.....	22 50
December—Cost of models.....	6 92
1853.	
January—J. H. Clark, bill board for P. Bennet.....	43 00
March—Messages per telegraph (3).....	3 83
April—J. T. Pitman, taking depositions.....	50 00
W. C. Hibbard, bill at City Hotel.....	4 50
Taking depositions in New York.....	113 60
Expenses of Ames, Jenckes & Corliss in New York.....	34 00
Do. “ Corliss and others, 2d time “.....	80 25
Expenses to Auburn.....	33 00
Samuel Ames, bill.....	1,005 00
B. R. Curtis.....	850 00
May—R. Robinson, expenses.....	10 00
J. T. Pitman, taking depositions.....	5 65
Sundry expenses.....	4 58
W. C. Hibbard, bill.....	32 50
Express for one package.....	25
July—Expenses.....	62
August—G. H. Corliss, expenses to Cooperstown.....	33 97
Wm. H. Seward, bill.....	1,000 00
P. H. Watson, for copies.....	2 02
September—Printing Seward’s argument.....	75 00
Samuel Blatchford’s account.....	250 00
October—T. A. Jenckes, bill.....	630 00
Hazard & Jenckes, bill.....	149 33
December—Cost of Models.....	4 64
1854.	
September—Knowles, Anthony & Co., bill printing, &c.....	154 40
October—Cost of models.....	30 72
November—Messages per telegraph (2).....	1 52
Letter per express.....	13
December 13—Irring House, bill board.....	21 50
16—Freight on models to New York.....	4 00
Cost of models.....	50 47
1855.	
January—E. J. Nigntingale, expenses to New York.....	11 50
J. H. Clark, expenses to Boston, &c.....	29 00
Roberts and Warburton, bill.....	311 35
Samuel Blatchford, balance of bill.....	863 40
Carried forward.....	<hr/> \$7,387 61

1855.	Brought forward	\$7,387 61
January—	J. Barstow	11 60
	Telegraph	2 01
	Expenses	68 07
	Astor House bill	511 94
	Taking deposition	24 00
	W. C. Hibbard on account of services	35 00
February—	Express for box	1 00
	J. Barstow sundry expenses	33 74
March—	G. H. Corliss expenses to N. Y.	25 95
April—	Bill for printing	150 00
	G. H. Corliss and J. Barstow expenses in New York	35 55
	Messages per telegraph	54
May—	Astor House bill and other expenses to New York	120 00
	Message from N. Y.	12
	Evening Post bill printing	176 25
	G. H. Corliss and J. Barstow expenses to N. Y.	34 50
	Printers bill in N. Y.	37 70
	G. H. Corliss expenses to N. Y.	7 40
	Freight on four boxes and one valve	4 00
June—	Message from N. Y.	12
	6—Astor House bill of board	411 60
	26—N. Richardson retaining fee	250 00
	Sundry patent expenses paid by G. H. Corliss in New York	350 74
July—	C. Akerman bill binding books	3 00
August—	Roberts and Warburton bill reporting before Judge Nelson	300 00
	Bill of drawing and engraving	71 00
	Stetson for services	5 00
	G. H. Corliss expenses to N. Y.	5 50
September—	Samuel Blatchford bill services bal. of same	2,000 00
October—	Amount paid for drawings &c.	32 94
November—	Propeller freight on boxes &c.	1 50
December—	“ “ “ 4 “ “ May 26th	1 50
	Cost of models	69 33
1856.		
January—	Engravers bill for wood cuts	73 00
	Bill printing Seward's argument and Judge charge	412 00
	G. R. Jackson, services	135 58
March—	W. C. Hibbard bill, services as expert	376 00
	Express for models	3 50
April—	Expenses in patent case	235 06
May—	Sundry expenses in patent case	12 18
June—	Message per telegraph	13
July—	Message to Philadelphia	1 20
	Carried forward	\$13,418 36

1856.	Brought forward.....	\$13,418 36
July—	Blatchford, Seward & Griswold bill. (August to December, 1855).....	300 00
	W. H. Burr, services as reporter.....	40 00
	M. C. Bryant, bill services in 1854 and 1855.....	204 62
	“ “ “ balance of billl services.....	25 38
	W. C. Hibbard bill, services.....	35 00
August—	Expenses of Charles W. Green, to Boston twice, to Woreester and postage.....	10 34
12—	Wm. Dodge, bill commissioner.....	250 00
September—	Telegraphic messages.....	2 53
	Samuel Ames bill, services.....	600 00
October—	Freight on models.....	4 31
	E. Harris, sundry expenses.....	45 00
	Samuel Blatchford bill, serviees to October 8th, 1856....	3,376 24
	Wm. H. Seward, balance of account.....	3,280 80
November—	Message per telegraph.....	65
December—	Samuel W. Peekham, bill services taking evidence..	136 40
	H. S. Bartlett, serviees.....	200 00
	J. B. Kimball “	50 00
	G. H. Corliss, expenses to Philadelphia and Washington.....	89 68
	Pitman's bill.....	10 00
	Cost of models.....	56 74
	Samuel Blatchford.....	500 00
	T. A. Jenekes, for professional services in defenece vs. Sickles' patents.....	8,812 00
1857.		
January—	Telegraph despatch	63
	J. B. Kimball, bal. of bill services.....	2 86
February—	Knowles, Anthony & Co., bill printing.....	40 00
April—	Knowles & Anthony, bill printing.....	40 50
May—	Phineas Bennett.....	122 35
	Sundry expenses in New York.....	200 00
	E. W. Stoughton, as retainer fee in Harper ease.....	250 00
June—	Phineas Bennett, by G. H. Corliss.....	10 00
	Samuel Blatchford, bill services.....	\$970 00
	Less.....	13 87
		<hr/> 956 13
May 18—	Printer's bill \$37 75, expenses \$7 35.....	45 10
	Samuel Blatchford for sundry expenses.....	165 31
December—	Samuel Blatchford, services in patent case and opposing extension of Sickles' patent.....	832 50
1859.		
January 20—	Message from Washington.....	1 51
21—	“ “ “ “	80
	Carried forward.....	<hr/> \$34,115 83

Brought forward.....	\$34,115 83
July—Part of balance of H. S. Bartlett account, from March, '56, to date.....	176 67
August—Knowles & Anthony bill.....	8 00
Coombs & Amsbury bill.....	10 05
1860.	
July—Charles Mason, for services in Siekles' extension case....	400 00
18—E. W. Stoughton, on aect. of Steinway & Greenwich, Milling Co. cases.....	500 00
October—A. F. Warburton, reporting in case Siekles v. Falls Co.	35 40
E. S. Renwick, bill services in case Siekles v. Falls Co.	125 00
E. W. Stoughton.....	500 00
November 10—G. H. Corliss and William Corliss, expenses to N. Y.....	38 10
December 3—E. W. Stoughton, to pay half bill printing in Falls case.....	63 40
1861.	
January—E. S. Renwick, bill revising testimony, &c., for Falls case.....	25 00
March—Charles Mason, for services in preventing the extension of Siekles' patent before Congress.....	300 00
April 29—Judge Parson's retainer.....	50 00
May 29—Copies of Siekles' patents.....	25 00
October 11—E. W. Stoughton for Rowland & Ervien case.....	500 00
29 S. A. Smith, expenses to Uxbridge.....	2 10
30—Fr't on 3 boxes to N. Y.....	75
B. R. Curtis charges for services for C. S. Co. to 18th inst.....	1,800 00
November 1—S. A. Smith, expenses to Northbridge.....	2 23
7—Telegram.....	38
9—William Corliss, expenses in Phila.....	20 00
Continental Hotel bill.....	145 31
1 to 11—Expenses of G. H. C. and counsel in patent case..	121 10
12—Express from Phila. on models.....	5 25
13—E. W. Stoughton.....	1,000 00
26—Express on package.....	25
December—E. S. Renwick, bill services in Rowland & Ervien case, &c.....	376 70
Cost of models.....	100 17
P. H. Watson, bill of expenses, copies, &c.....	194 52
B. R. Curtis.....	1,000 00
1862.	
March 26—W. D. Baldwin, for certified copies of Sickles' 2 reissues.....	13 50
April 16—H. Waters, bill services.....	325 25
23—E. W. Stoughton.....	1,000 00
May 3—Hotel bills at Phila...	100 33
Carried forward.....	\$43,080 29

Brought forward.....	\$43,080 29
May 5—Hotel Bill at New York.....	9 75
June 16—B. R. Curtis.....	1,000 00
19—A. V. Parson's retaining fee.....	50 00
Copies of affidavits, &c.....	28 00
Express on papers from Judge Parsons.....	50
Cost of models.....	55 82
August 13—Copies of records.....	4 00
September 24—Telegram.....	30
October 9—G. H. Corliss board and expenses in N. Y.....	41 02
13—Express on models.....	1 75
E. W. Stoughton, for Evans and Seagrave case.....	1,000 00
November 13—G. F. Nesbitt & Co., bill printing in Sickles' case..	143 55
December 31—E. W. Stoughton, to balance acc.....	500 00
1863.	
January 3—E. S. Renwick, bill for services.....	187 00
	<hr/>
	\$46,101 98

STATEMENT

Showing the expenditures incurred on account of my invention.

1849.		
	Cost of Model and Drawings.....	\$80 00
	C. M. Keller's bill, including Patent Office fee....	100 00
	C. M. Keller's retaining fee.....	50 00
1851.		
February 27.	J. Barstow, expenses to Washington.....	62 14
March 28.	Watson & Renwick.....	50 00
	Patent Office fee for Reïssue.....	15 00
April.	B. R. Curtis, retaining fee	300 00
May.	Watson & Renwick.....	100 00
August.	" "	125 40
1852.		
January 23.	J. Barstow, sundry expenses.....	34 37
	T. Anthony, bill services.....	20 00
" 31.	J. A. Clark, sundry expenses.....	7 67
May 8.	Knowles & Anthony, for 50 copies patent.....	4 50
July 31.	Expenses of Waterman.....	1 50
	E. J. Nightingale, expenses to Newport.....	4 50
August 3.	Mr. Fitzgerald.....	150 00
" 5.	Atlantic House bill, board counsel and witnesses,	214 47
	Steamer Perry, freight on 4 boxes from Newport,	1 05
	E. Harris, sundry expenses.....	3 56
September 6.	H. Waters' account.....	100 00
" 7.	Watson & Renwick.....	120 00
October 12.	W. C. Hibbard, services.....	148 50
1853.		
January 12.	Watson & Renwick.....	172 95
July 12.	Mr. Fitzgerald.....	400 00
December 3.	Samuel Ames.....	1,020 00
" 24.	T. A. Jenckes.....,	200 00
1854.		
June 14.	Court charges in patent case.....	401 23
	Amount carried forward.....	<u>\$3,886 84</u>

	Amount brought forward.....	\$3,886 84
1857.		
February 19.	E. W. Stoughton, retainer	250 00
May	“ “	250 00
June 23.	J. H. Clark, expenses to Northbridge.....	2 42
“ 24.	E. S. Renwick.....	100 00
July 24.	Knowles & Anthony, bill.....	5 50
“ 31.	Cost of models.....	222 28
September 16.	Box from Newport.....	50
	Atlantic House, bill of board, &c	177 25
October.	Poppenhusen & Konig, note to E. W. Stoughton .	500 00
November 7.	E. W. Stoughton.....	500 00
December 15.	C. S. E. Co., note given E. S. Renwick.....	563 00
	Marshal's fees	9 00
December 23.	E. Harris' expenses to Northbridge	2 46
	“ “ Pawtucket.....	25
	Cost of models.....	423 77
1858.		
January 29.	Copies from Patent Office.....	11 66
February.	C. S. E. Co., 3 notes to E. W. Stoughton.....	1,282 47
March 13.	Witness fees in case against Dexter.....	3 00
July 9.	E. J. Nightingale, expenses to Bristol, Newport and Warren.....	3 00
	Expenses of Harris, Nightingale and Cornell to Newport	2 00
“ 12.	W. A. Harris, expenses to Northbridge.....	2 10
“ 21.	Board of counsel and witnesses at Atlantic House, Newport	161 40
“ 22.	Freight on models.....	1 25
	Expense of moving models in Newport.....	3 75
	Express on models.....	62
“ 27.	Boston & Prov. R. R. Co., bill freight on boxes...	77
“ 30.	C. S. E. Co., note to B. R. Curtis.....	1,455 94
“ 31.	E. J. Nightingale, expenses to Newport.....	50
August 2.	C. S. E. Co., note to E. W. Stoughton	1,000 00
“ 13.	E. S. Renwick.....	334 85
“ 16.	Elisha Harris, expenses to Salem and Taunton...	7 64
September 28.	H. Waters, account for services as expert.....	1,244 49
November 27.	City Hotel bill	15 50
“ 29.	Elisha Harris, expenses to Northbridge.....	2 04
December 31.	Cost of models.....	70 26
1859.		
January 14.	S. D. Cozzens' bill	78 18
February 16.	Expenses of witnesses.....	1 00
“ 18.	E. J. Nightingale, expenses to Bristol.....	76
“ 25.	City Hotel, bill board counsel and witnesses	178 76
	Amount carried forward	\$12,755 21

	Amount brought forward	\$12,755 21
1859.		
March.	C. S. E. Co., note to B. R. Curtis.....	1,000 00
	“ “ E. W. Stoughton	1,000 00
“ 5.	E. W. Stoughton.....	250 00
“ 9.	Henry Pitman for copy of charge.....	4 40
April 21.	Postage on patent documents.....	24
June 30.	Cost of models.....	106 70
	Expenses attending two trips to Washington on reissue	145 00
	Patent Office, fees for extensions.....	165 00
July.	A. B. Stoughton.....	100 00
August 4.	Paid B. F. Thurston for costs.....	463 30
September 3.	E. S. Renwick.....	596 40
“ 14.	H. Waters.....	163 72
November 3.	Traveling expenses, self and Talbot.....	38 22
December 31.	Knowles, Anthony & Co., bill printing.....	57 00
	Cost of models.....	51 34
1860.		
February 26.	Telegram from B. R. Curtis.....	47
March 3.	W. R. Talbot, expenses to Boston.....	3 40
June 30.	Cost of models.....	73 89
September 19.	J. H. Clark, expenses to Taunton, Newburyport and Portsmouth.....	8 96
“ 24.	E. J. Nightingale, expenses to Hartford.....	5 65
“ 27.	A. F. Warburton, Reporter	50 00
October 20.	E. W. Stoughton, account of services in Wheeler & Wilson case.....	1,000 00
October 27.	E. S. Lesley, expenses to Providence and Hartford	16 25
“ 30.	E. S. Renwick, bill for services, Sept. 13th to Oct. 10th, 1860.....	372 40
“ 31.	Hotel bills, expenses of counsel and witnesses...	241 41
	Balance of A. F. Warburton, bill reporting.....	189 65
	Witness fees.....	18 35
November 17.	William C. Bryant, bill printing.....	196 30
December 31.	Cost of models.....	232 24
1861.		
January 16.	E. S. Renwick, bill revising testimony, &c., for Wheeler & Wilson case	75 00
April 30.	H. Waters' bill in Wheeler & Wilson case.....	383 75
June 4.	E. W. Stoughton.....	1,000 00
October	B. R. Curtis.....	1,200 00
December 31.	Cooke & Danielson, bill printing.....	8 00
	Knowles & Anthony, bill printing.....	35 75
	T. A. Jenckes' bill	962 00
	Cost of models.....	22 50
	Amount carried forward.....	\$22,992 50

	Amount brought forward.....	\$22,992 50
1862.		
January 2.	Express on books	6 00
March 8.	T. A. Jenckes' balance of account.....	1,500 00
	C. F. Pike on account.....	70 00
April.	C. F. Pike on account.....	230 00
May 8.	J. H. Clark, expenses to Mansfield.....	1 20
	C. F. Pike on account.....	236 35
June 2.	B. R. Curtis on account	500 00
"	C. F. Pike on account	255 00
July.	C. F. Pike on account.....	142 35
September 27.	J. S. Keys, U. S. Marshal fees	182 70
"	C. F. Pike on account.. ..	65 95
October.	C. E. Pike on account.....	225 00
November 13.	J. S. Keys, U. S. Marshal fees	91 96
December 22.	C. F. Pike on account.....	40 00
"	23. F. Potter, bill models.....	336 77
"	C. F. Pike on account.....	153 13
"	C. F. Pike, balance bill for services and expenses.	270 54
1863.		
April.	E. W. Stoughton, retainer fee.....	500 00
" 11.	E. W. Stoughton.....	1,000 00
May 26.	Estate of R. S. Baldwin.....	515 73
" "	Estate of R. S. Baldwin.....	1,239 27
June 11.	J. M. W. Yerrington... ..	84 00
" "	U. S. Marshal's fees.....	294 44
" 19.	E. W. Stoughton.....	1,000 00
" 24.	Expenses Evans and Seagrave case	84 00
August 10.	William D. Baldwin.....	7 10
September 11.	G. F. Nesbit, bill printing.....	51 00
October 20.	B. R. Curtis.....	1,000 00
December 29.	A Mudge & Co., bill printing	27 50
1864.		
January 8.	A. Mudge & Co	16 00
February 4.	George Gifford.....	1,500 00
" 18.	Railroad freight bill	21 00
" 29.	B. R. Curtis.....	1,260 09
April 26.	John S. Beach.....	100 00
June 8.	E. W. Stoughton.....	500 00
" "	Telegram.....	7 00
August 23.	Clerk's fees.....	171 76
October 19.	A. V. Parsons	200 00
1865.		
December 20.	John S. Beach.....	75 00
" 22.	E. W. Stoughton.....	1,500 00
	Amount carried forward.....	<u>\$38,413 34</u>

Amount brought forward		\$38,413 34
1866.		
January 8.	E. W. Stoughton.....	1,000 00
" 30.	G. F. Nesbit & Co., bill printing.....	161 50
July 3.	T. A. Jenckes	1,720 04
December 18.	E. W. Stoughton.....	500 00
" 28.	E. W. Stoughton.....	500 00
" 31.	Edwin Reynolds, services and expenses.....	842 52
1867.		
May 29.	Henry Pitman, clerk's fees.....	210 00
1868.		
February 11.	Travel and Telegram.....	2 55
March 30.	C. M. Keller.....	500 00
April 7.	E. W. Stoughton.....	1,000 00
June 22.	E. H. & C. B. Stoughton.....	150 00
July 17.	" "	150 00
" 25.	E. W. Stoughton.....	1,000 00
August 4.	Holske Machine Co.....	91 75
" 25.	E. H. & C. B. Stoughton.....	225 21
September 4.	Harvey Waters	500 00
October 1.	E. H. Stoughton.....	250 00
" 14.	Telegrams.....	75
" 20.	Freight bills.....	2 47
December 8.	F. C. Gardner, bill costs.....	380 97
" "	Samuel Blatchford, balance account.....	2,000 00
" "	Cost of models.....	152 14
" 31.	Edwin Reynolds, services and expenses.....	3,170 08
1869.		
January 7.	John S. Beach.....	1,130 00
" "	B. B. Curtis.....	952 40
July 13.	B. B. Hammond.....	240 00
" "	Henry Pitman, clerk's fees.....	160 65
" 21.	Harvey Waters	358 85
September 20.	C. M. Keller.....	2,250 70
November 2.	C. B. Stoughton.....	250 00
December 6.	H. E. Stoughton	349 48
" 31.	Edwin Reynolds, services and expenses.....	3,569 43
Total.....		<u>\$62,124 83</u>





SEPT 71

N. MANCHESTER,
INDIANA



